Postpartum Hemorrhage

CONTENTS

BACKGROUND

COMPLICATIONS CAUSING HEMORRHAGE

DIAGNOSIS

MANAGEMENT

KEY POINTS

1. Postpartum hemorrhage may result from lacerations, retained placenta, uterine inversion, or coagulopathy.
2. Management of postpartum hemorrhage begins prior to delivery with assessment of precedent risk factors including macrosoma, polyhydramnios, precipitous labor, grand multiparity, anesthesia, augmentation, and cesarian delivery.
3. Postpartum hemorrhage is a critical postpartum complication that requires rapid identification and management.
4. Management of postpartum hemorrhage should proceed in a stepwise manner until hemorrhage is controlled.

BACKGROUND

Postpartum hemorrhage complicates 5–10% of all deliveries. It is the second leading cause of maternal mortality, causing approximately one-sixth of all such deaths. All deliveries are associated with blood loss. Postpartum hemorrhage is defined as blood loss in excess of 500 cc. Actual blood loss during the course of routine delivery may exceed 500 cc if carefully measured. Although the definition of postpartum hemorrhage remains unchanged, from a practical standpoint, postpartum hemorrhage is often understood as hemorrhage that persists beyond expectation. Early postpartum hemorrhage is defined as blood loss occurring in the first 24 hours postpartum. Late postpartum hemorrhage is defined as blood loss occurring between 24 hours and 6 weeks postpartum.

Postpartum hemorrhage may be caused by a variety of obstetrical complications including uterine atony, lacerations, retained placenta, and obstetrically
related coagulopathy. Most cases of postpartum hemorrhage are caused by obstetrical complications, however, providers should also be aware that pre-existing coagulopathies may also manifest as postpartum hemorrhage.

**COMPLICATIONS CAUSING HEMORRHAGE**

**Uterine Atony**

Following routine delivery, myometrial contraction results in vascular constriction and control of bleeding. A variety of conditions may result in diminished myometrial contraction and subsequent uterine atony. Factors associated with an increased risk of uterine atony include (a) anatomic conditions such as leiomyosis; (b) uterine distention from such conditions as multigestation, polyhydramnios, or macrosomia; (c) labor-related factors such as prolonged or precipitous delivery; (d) management factors such as anesthesia, augmentation/induction, or cesarien delivery; (e) maternal factors such as multiparity; and (f) postpartum complications such as infection. Uterine atony is responsible for 50% of postpartum hemorrhage cases.

**Lacerations**

Delivery often results in trauma to the birth canal and may result in lacerations to the uterus, cervix, vagina, or perineum. Significant lacerations are associated with both precipitous and operative delivery. Although bleeding from such lacerations is generally self-limited or controlled with routine repair, lacerations are responsible for up to 20% of postpartum hemorrhage cases.

**Retained Placenta**

Retained placenta represents the third significant cause of postpartum hemorrhage. Approximately 10% of cases are related to this cause.

**Coagulopathy**

Although relatively uncommon, a number of obstetrical complications may lead to coagulopathy, which may in turn lead to persistent postpartum bleeding. Factors associated with coagulopathy include fetal demise, amniotic fluid embolus, pre-eclampsia/eclampsia, sepsis, and abruptio placenta.

**Uterine Inversion**

Under some circumstances, the uterine fundus may invert, preventing myometrial contraction and vascular constriction.

**DIAGNOSIS**

Diagnosis is generally straightforward and consists of persistent bleeding that exceeds expected levels following delivery. Although the exact blood loss
may be difficult to quantify, any suspicion of excess blood loss should lead to an immediate investigation of potential causes. In addition, providers should have a low index of suspicion for initiating general management steps, as postpartum hemorrhage may be both rapid and severe.

**MANAGEMENT**

Management of postpartum hemorrhage begins prior to delivery. Patients with predisposing risk factors should be identified and complications should be anticipated. For patients with significant predisposing risk factors, intravenous access and cross-matched blood products should be arranged prior to delivery. The risk of postpartum hemorrhage may also be reduced with appropriate management of delivery. The delivery should be controlled, operative deliveries should be minimized, and delivery of the placenta should be performed with gentle traction applied to the umbilical cord. Recent studies have suggested that the early administration of oxytocin (with the delivery of the anterior shoulder) may also reduce the risk of persistent bleeding.

Despite appropriate predelivery and postpartum management, postpartum hemorrhage may occur. Because postpartum hemorrhage may represent a life-threatening complication, initial steps should be taken to ensure hemodynamic stability. Blood should be typed and cross-matched. Intravenous access should be established preferably with two large bore access sites. Patient blood pressure should be closely monitored. Significant drops in blood pressure should lead to initiation of fluid support with either intravenous fluid or blood products. In addition, appropriate labs should be sent including a complete blood count and a coagulation panel.

While performing the measures mentioned above, a review of risk factors should be performed and common causes explored. Uterine tone should be assessed. A comprehensive inspection of the perineum, vagina, and cervix should be performed. Under some circumstances, exploration of the uterine cavity (either manually or via ultrasound) may also be indicated.

**Laceration**

Significant lacerations will require repair. Laceration and episiotomy repair are discussed below. The presence of laceration does not preclude the possibility of either uterine atony or coagulopathy. Repair of lacerations does not necessarily ensure the cessation of bleeding and such bleeding must be managed as noted here if it persists.

**Persistent Bleeding**

Management of persistent bleeding will generally follow a stepwise approach:
1. Uterine massage: bimanual massage with one hand on the abdomen and one hand in the vagina.

2. Oxytocin: may be started with the delivery of the anterior shoulder. Oxytocin may be administered as either 10 U intramuscularly or 10–20 U in 1 L of normal saline delivered intravenously.

3. Methylergonovine: efficacy is similar to oxytocin but is associated with more significant side effects, including a significant rise in blood pressure. The usual dose is 0.2 mg intramuscular.

4. Prostaglandins: prostaglandin F-2-α or 15-methylprostaglandin serve to enhance uterine contractility.

If bleeding persists despite the measures just given, immediate evaluation for possible surgical or embolization intervention is indicated.